

1. Harmonia theorem represented in Lisp:

```
(defvar *harmonia* '(
  (1 ((Grandparent x y)) ((Parent x z) (Parent z y)) )
  (2 ((Parent x y)) ((Mother x y)) )
  (3 ((Parent x y)) ((Father x y)) )
  (4 ((Father (Zeus) (Ares)) ) nil )
  (5 ((Mother (Hera) (Ares)) ) nil )
  (6 ((Father (Ares) (Harmonia)) ) nil )
  (7 nil ((Grandparent x (Harmonia))) ) ;; goal clause begins here
)
```

2. Test results of two-pointer on 5 theorems:

Theorems	The number of resolution steps taken to derive False
Howling Hound	45
Customs Official	40
Roadrunner	445
Harmonia	19
Test (my own theorem)	4

3. Full resolution steps in each case:

1. Howling Hound:

```
*****PROOF *****
(1 ((HOWL Z)) ((HOUND Z)))
(2 NIL ((HAVE X Y) (CAT Y) (HAVE X Z) (MOUSE Z)))
(3 NIL ((LS W) (HAVE W V) (HOWL V)))
(4 ((HAVE (JOHN) (A))) NIL)
(5 ((CAT (A)) (HOUND (A))) NIL)
(6 ((MOUSE (B))) NIL)
(7 ((LS (JOHN))) NIL)
(8 ((HAVE (JOHN) (B))) NIL)
$(9 NIL ((HAVE X Y) (CAT Y) (HAVE X (B)))): ( 2, 6)
$(10 NIL ((HAVE (JOHN) V) (HOWL V))): ( 3, 7)
$(11 NIL ((CAT (B)) (HAVE (JOHN) Z) (MOUSE Z))): ( 2, 8)
$(12 NIL ((HAVE (JOHN) Y) (CAT Y) (MOUSE (B)))): ( 2, 8)
$(13 NIL ((LS (JOHN)) (HOWL (B)))): ( 3, 8)
```

\$(14 NIL ((CAT (A)) (HAVE (JOHN) (B)))): (4, 9)
 \$(15 ((HOUND (A))) ((HAVE X (A)) (HAVE X (B)))): (5, 9)
 \$(16 NIL ((CAT (B)) (HAVE (JOHN) (B)))): (8, 9)
 \$(17 NIL ((HAVE (JOHN) Y) (CAT Y))): (8, 9)
 \$(18 NIL ((HAVE (JOHN) V) (HOUND V))): (1, 10)
 \$(19 NIL ((HOWL (A)))): (4, 10)
 \$(20 NIL ((HOWL (B)))): (8, 10)
 \$(21 NIL ((CAT (B)) (MOUSE (A)))): (4, 11)
 \$(22 NIL ((CAT (B)) (MOUSE (B)))): (8, 11)
 \$(23 NIL ((CAT (A)) (MOUSE (B)))): (4, 12)
 \$(24 ((HOUND (A))) ((HAVE (JOHN) (A)) (MOUSE (B)))): (5, 12)
 \$(25 NIL ((LS (JOHN)) (HOUND (B)))): (1, 13)
 \$(26 ((HOUND (A))) ((HAVE (JOHN) (B)))): (5, 14)
 \$(27 NIL ((CAT (A)))): (8, 14)
 \$(28 ((HOWL (A))) ((HAVE X (A)) (HAVE X (B)))): (1, 15)
 \$(29 ((HOUND (A))) ((HAVE (JOHN) (A)))): (8, 15)
 \$(30 NIL ((CAT (B)))): (8, 16)
 \$(31 NIL ((HOUND (A)))): (4, 18)
 \$(32 ((CAT (A))) ((HAVE (JOHN) (A)))): (5, 18)
 \$(33 NIL ((HOUND (B)))): (8, 18)
 \$(34 NIL ((HAVE (JOHN) (A)) (HAVE X (A)) (HAVE X (B)))): (15, 18)
 \$(35 ((HOUND (A))) ((MOUSE (B)))): (5, 23)
 \$(36 ((HOWL (A))) ((HAVE (JOHN) (A)) (MOUSE (B)))): (1, 24)
 \$(37 NIL ((HAVE (JOHN) (A)) (MOUSE (B)))): (18, 24)
 \$(38 ((HOWL (A))) ((HAVE (JOHN) (B)))): (1, 26)
 \$(39 ((HOUND (A))) NIL): (8, 26)
 \$(40 NIL ((HAVE (JOHN) (A)) (HAVE (JOHN) (B)))): (18, 26)
 \$(41 NIL ((LS W) (HAVE W (A)) (HAVE X (A)) (HAVE X (B)))): (3, 28)
 \$(42 ((HOWL (A))) ((HAVE (JOHN) (A)))): (8, 28)
 \$(43 NIL ((HAVE X (A)) (HAVE X (B)))): (19, 28)
 \$(44 NIL ((HAVE (JOHN) (A)))): (18, 29)
 \$(45 ((CAT (A))) NIL): (5, 31)
 \$(46 NIL ((HAVE (JOHN) (B)))): (26, 31)
 \$(47 NIL ((HAVE X (A)) (HAVE X Z) (MOUSE Z) (HAVE (JOHN) (A)))): (2, 32)
 \$(48 ((HOWL (A))) ((MOUSE (B)))): (1, 35)
 \$(49 NIL ((MOUSE (B)))): (31, 35)
 \$(50 NIL ((LS W) (HAVE W (A)) (HAVE (JOHN) (A)) (MOUSE (B)))): (3, 36)
 \$(51 NIL ((LS W) (HAVE W (A)) (HAVE (JOHN) (B)))): (3, 38)
 \$(52 ((HOWL (A))) NIL): (8, 38)
 \$(53 NIL NIL): (31, 39)

2.Customs Official

*****PROOF *****

(1 ((V X) (S X (F X)) ((E X)))
 (2 ((V Y) (C (F Y)) ((E Y)))
 (3 ((E (A))) NIL)
 (4 ((D (A))) NIL)
 (5 ((D Z)) ((S (A) Z)))
 (6 NIL ((D W) (V W)))
 (7 NIL ((D R) (C R)))
 \$(8 ((V Y)) ((D (F Y)) (E Y))): (2, 7)

```

$(9 NIL ((C (A)))):      ( 4, 7)
$(10 NIL ((C R) (S (A) R))):      ( 5, 7)
$(11 ((V (A))) ((D (F (A))))):    ( 3, 8)
$(12 ((V Y)) ((E Y) (S (A) (F Y)))):    ( 5, 8)
$(13 NIL ((D W) (D (F W)) (E W))):    ( 6, 8)
$(14 ((V (A))) ((C (F (A))) (E (A)))):    ( 1, 10)
$(15 ((V (A))) ((S (A) (F (A))))):    ( 5, 11)
$(16 NIL ((D (A)) (D (F (A))))): ( 6, 11)
$(17 ((V (A))) ((E (A)))):      ( 1, 12)
$(18 NIL ((D W) (E W) (S (A) (F W)))):    ( 6, 12)
$(19 NIL ((D (F (A))) (E (A)))): ( 4, 13)
$(20 NIL ((D (F W)) (E W) (S (A) W))):    ( 5, 13)
$(21 ((V (A))) ((C (F (A))))):    ( 3, 14)
$(22 NIL ((D (A)) (C (F (A))) (E (A)))): ( 6, 14)
$(23 NIL ((D (A)) (S (A) (F (A))))):    ( 6, 15)
$(24 NIL ((D (F (A))))): ( 4, 16)
$(25 NIL ((D (F (A))) (S (A) (A)))):    ( 5, 16)
$(26 ((V (A))) NIL):      ( 3, 17)
$(27 NIL ((D (A)) (E (A)))):    ( 6, 17)
$(28 ((V (A))) ((D (A)) (E (A)))):    ( 1, 18)
$(29 NIL ((E (A)) (S (A) (F (A))))):    ( 4, 18)
$(30 NIL ((E W) (S (A) (F W)) (S (A) W))):    ( 5, 18)
$(31 ((V (A))) ((D (F (F (A)))) (E (F (A))) (E (A)))):    ( 1, 20)
$(32 NIL ((D (A)) (C (F (A))))): ( 6, 21)
$(33 NIL ((C (F (A))) (E (A)))): ( 4, 22)
$(34 NIL ((C (F (A))) (E (A)) (S (A) (A)))):    ( 5, 22)
$(35 NIL ((S (A) (F (A))))):    ( 4, 23)
$(36 NIL ((S (A) (F (A))) (S (A) (A)))): ( 5, 23)
$(37 NIL ((D (A)))):      ( 6, 26)
$(38 NIL ((E (A)))):      ( 4, 27)
$(39 NIL ((E (A)) (S (A) (A)))): ( 5, 27)
$(40 ((V (A))) ((D (A)))):      ( 3, 28)
$(41 ((V (A))) ((E (A)) (S (A) (A)))):    ( 5, 28)
$(42 ((V (A))) ((E (F (A))) (S (A) (F (F (A)))) (E (A)))): ( 1, 30)
$(43 ((V (A))) ((D (F (F (A)))) (E (F (A))))):    ( 3, 31)
$(44 NIL ((D (A)) (D (F (F (A)))) (E (F (A))) (E (A)))):    ( 6, 31)
$(45 NIL ((C (F (A))))): ( 4, 32)
$(46 NIL ((C (F (A))) (S (A) (A)))):    ( 5, 32)
$(47 NIL NIL): ( 4, 37)

```

3.Roadrunner

*****PROOF *****

```

(1 ((RR (A))) ((COYOTE Y)))
(2 ((CHASE Z (A))) ((COYOTE Z)))
(3 ((SMART X)) ((RR X) (BEEP X)))
(4 NIL ((COYOTE W) (RR U) (CATCH W U) (SMART U)))
(5 ((FRUSTRATED S) (CATCH S T)) ((COYOTE S) (RR T) (CHASE S T)))
(6 ((BEEP R)) ((RR R)))
(7 ((COYOTE (B))) NIL)
(8 NIL ((FRUSTRATED (B))))
$(9 ((RR (A))) NIL):      ( 1, 7)

```

\$(10 ((CHASE (B) (A))) NIL): (2, 7)
 \$(11 NIL ((RR U) (CATCH (B) U) (SMART U))): (4, 7)
 \$(12 ((FRUSTRATED (B)) (CATCH (B) T)) ((RR T) (CHASE (B) T))): (5, 7)
 \$(13 ((CATCH (B) T)) ((COYOTE (B)) (RR T) (CHASE (B) T))): (5, 8)
 \$(14 ((SMART (A))) ((BEEP (A)))): (3, 9)
 \$(15 NIL ((COYOTE W) (CATCH W (A)) (SMART (A)))): (4, 9)
 \$(16 ((FRUSTRATED S) (CATCH S (A))) ((COYOTE S) (CHASE S (A)))): (5, 9)
 \$(17 ((BEEP (A))) NIL): (6, 9)
 \$(18 ((FRUSTRATED (B)) (CATCH (B) (A))) ((COYOTE (B)) (RR (A)))): (5, 10)
 \$(19 NIL ((CATCH (B) (A)) (SMART (A)) (COYOTE Y))): (1, 11)
 \$(20 NIL ((CATCH (B) U) (RR U) (BEEP U))): (3, 11)
 \$(21 ((FRUSTRATED (B))) ((SMART U) (COYOTE (B)) (RR U) (CHASE (B) U))): (5, 11)
 \$(22 NIL ((CATCH (B) (A)) (SMART (A)))): (9, 11)
 \$(23 ((FRUSTRATED (B)) (CATCH (B) (A))) ((CHASE (B) (A)) (COYOTE Y))): (1, 12)
 \$(24 ((CATCH (B) T)) ((RR T) (CHASE (B) T))): (8, 12)
 \$(25 ((FRUSTRATED (B)) (CATCH (B) (A))) ((CHASE (B) (A)))): (9, 12)
 \$(26 ((FRUSTRATED (B)) (CATCH (B) (A))) ((RR (A)))): (10, 12)
 \$(27 ((FRUSTRATED (B))) ((SMART U) (RR U) (CHASE (B) U))): (11, 12)
 \$(28 ((CATCH (B) (A))) ((COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (1, 13)
 \$(29 ((CATCH (B) (A))) ((RR (A)) (COYOTE (B)))): (2, 13)
 \$(30 NIL ((SMART U) (COYOTE (B)) (RR U) (CHASE (B) U))): (4, 13)
 \$(31 ((CATCH (B) (A))) ((COYOTE (B)) (CHASE (B) (A)))): (9, 13)
 \$(32 NIL ((COYOTE W) (RR (A)) (CATCH W (A)) (BEEP (A)))): (4, 14)
 \$(33 ((SMART (A))) ((RR (A)))): (6, 14)
 \$(34 NIL ((RR (A)) (CATCH (B) (A)) (BEEP (A)))): (11, 14)
 \$(35 ((FRUSTRATED W)) ((SMART (A)) (COYOTE W) (RR (A)) (CHASE W (A)))): (5, 15)
 \$(36 ((FRUSTRATED (B))) ((COYOTE (B)) (SMART (A)) (RR (A)) (CHASE (B) (A)))): (12, 15)
 \$(37 NIL ((SMART (A)) (COYOTE (B)) (RR (A)) (CHASE (B) (A)))): (13, 15)
 \$(38 NIL ((COYOTE W) (CATCH W (A)) (BEEP (A)))): (14, 15)
 \$(39 ((FRUSTRATED S) (CATCH S (A))) ((COYOTE S))): (2, 16)
 \$(40 ((FRUSTRATED (B)) (CATCH (B) (A))) ((COYOTE (B)))): (10, 16)
 \$(41 ((FRUSTRATED W)) ((SMART (A)) (COYOTE W) (CHASE W (A)))): (15, 16)
 \$(42 ((SMART (A))) NIL): (14, 17)
 \$(43 ((FRUSTRATED (B)) (CATCH (B) (A))) ((COYOTE (B)) (COYOTE Y))): (1, 18)
 \$(44 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE (B)) (RR (A)))): (4, 18)
 \$(45 NIL ((CATCH (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3, 19)
 \$(46 ((FRUSTRATED (B)))
 ((SMART (A)) (COYOTE Y) (COYOTE (B)) (RR (A)) (CHASE (B) (A)))): (5, 19)
 \$(47 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y) (RR (A)) (CHASE (B) (A)))): (12, 19)
 \$(48 NIL ((SMART (A)) (COYOTE Y) (COYOTE (B)) (RR (A)) (CHASE (B) (A)))): (13, 19)
 \$(49 NIL ((CATCH (B) (A)) (COYOTE Y) (BEEP (A)))): (14, 19)
 \$(50 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y) (COYOTE (B)) (CHASE (B) (A)))): (16, 19)
 \$(51 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y) (COYOTE (B)) (RR (A)))): (18, 19)
 \$(52 ((FRUSTRATED (B))) ((BEEP U) (COYOTE (B)) (RR U) (CHASE (B) U))): (5, 20)
 \$(53 NIL ((CATCH (B) U) (RR U))): (6, 20)
 \$(54 NIL ((CATCH (B) (A)) (BEEP (A)))): (9, 20)
 \$(55 ((FRUSTRATED (B))) ((BEEP U) (RR U) (CHASE (B) U))): (12, 20)
 \$(56 NIL ((BEEP U) (COYOTE (B)) (RR U) (CHASE (B) U))): (13, 20)
 \$(57 ((FRUSTRATED (B))) ((RR (A)) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)))): (16, 20)
 \$(58 NIL ((CATCH (B) (A)) (RR (A)))): (17, 20)
 \$(59 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE (B)) (RR (A)))): (18, 20)

\$(60 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE (B)) (CHASE (B) (A)))): (9, 21)
 \$(61 ((FRUSTRATED (B))) ((SMART (A)) (RR (A)) (CHASE (B) (A)))): (12, 22)
 \$(62 ((CATCH (B) (A))) ((CHASE (B) (A)) (COYOTE Y))): (8, 23)
 \$(63 ((FRUSTRATED (B)) (CATCH (B) (A))) ((COYOTE Y))): (10, 23)
 \$(64 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324) (CHASE (B) (A)) (COYOTE Y))): (19, 23)
 \$(65 ((FRUSTRATED (B))) ((RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (20, 23)
 \$(66 ((FRUSTRATED (B))) ((SMART (A)) (CHASE (B) (A)) (COYOTE Y))): (22, 23)
 \$(67 ((CATCH (B) (A))) ((CHASE (B) (A)))): (9, 24)
 \$(68 ((CATCH (B) (A))) ((RR (A)))): (10, 24)
 \$(69 NIL ((SMART U) (RR U) (CHASE (B) U))): (11, 24)
 \$(70 NIL ((SMART (A)) (COYOTE Y) (RR (A)) (CHASE (B) (A)))): (19, 24)
 \$(71 NIL ((BEEP U) (RR U) (CHASE (B) U))): (20, 24)
 \$(72 NIL ((SMART (A)) (RR (A)) (CHASE (B) (A)))): (22, 24)
 \$(73 ((FRUSTRATED (B)) (CATCH (B) (A))) NIL): (10, 25)
 \$(74 ((FRUSTRATED (B))) ((RR (A)) (BEEP (A)) (CHASE (B) (A)))): (20, 25)
 \$(75 ((FRUSTRATED (B))) ((SMART (A)) (CHASE (B) (A)))): (22, 25)
 \$(76 ((FRUSTRATED (B))) ((SMART (A)) (RR (A)))): (11, 26)
 \$(77 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y) (RR (A)))): (19, 26)
 \$(78 ((FRUSTRATED (B))) ((BEEP (A)) (RR (A)))): (20, 26)
 \$(79 ((CATCH (B) (A))) ((COYOTE Y) (COYOTE (B)))): (2, 28)
 \$(80 NIL ((SMART (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (15, 28)
 \$(81 NIL ((SMART (A)) (COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (19, 28)
 \$(82 NIL ((RR (A)) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (20, 28)
 \$(83 NIL ((SMART (A)) (RR (A)) (COYOTE (B)))): (4, 29)
 \$(84 ((CATCH (B) (A))) ((COYOTE (B)))): (9, 29)
 \$(85 NIL ((SMART (A)) (COYOTE Y) (RR (A)) (COYOTE (B)))): (19, 29)
 \$(86 NIL ((BEEP (A)) (RR (A)) (COYOTE (B)))): (20, 29)
 \$(87 NIL ((SMART (A)) (COYOTE (B)) (CHASE (B) (A)))): (9, 30)
 \$(88 NIL ((COYOTE (B)) (RR (A)) (CHASE (B) (A)) (BEEP (A)))): (14, 30)
 \$(89 NIL ((COYOTE W) (CATCH W (A)) (BEEP (A)) (COYOTE Y))): (1, 32)
 \$(90 ((FRUSTRATED W)) ((BEEP (A)) (COYOTE W) (RR (A)) (CHASE W (A)))): (5, 32)
 \$(91 NIL ((COYOTE W) (CATCH W (A)) (RR (A)))): (6, 32)
 \$(92 ((FRUSTRATED (B)))
 ((COYOTE (B)) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (23, 32)
 \$(93 ((SMART (A))) ((COYOTE Y))): (1, 33)
 \$(94 NIL ((CATCH (B) (A)) (COYOTE Y) (RR (A)))): (19, 33)
 \$(95 ((FRUSTRATED (B))) ((COYOTE (B)) (CHASE (B) (A)) (RR (A)))): (21, 33)
 \$(96 ((FRUSTRATED (B))) ((CHASE (B) (A)) (RR (A)))): (27, 33)
 \$(97 NIL ((COYOTE (B)) (CHASE (B) (A)) (RR (A)))): (30, 33)
 \$(98 NIL ((BEEP (A)) (RR (A)) (CHASE (B) (A)))): (24, 34)
 \$(99 ((FRUSTRATED W)) ((SMART (A)) (COYOTE W) (CHASE W (A)) (COYOTE Y))): (1, 35)
 \$(100 ((FRUSTRATED W)) ((SMART (A)) (RR (A)) (COYOTE W))): (2, 35)
 \$(101 ((FRUSTRATED W)) ((COYOTE W) (CHASE W (A)) (RR (A)))): (33, 35)
 \$(102 ((FRUSTRATED W)) ((BEEP (A)) (COYOTE W) (CHASE W (A)))): (16, 38)
 \$(103 NIL ((COYOTE W) (CATCH W (A)))): (17, 38)
 \$(104 ((FRUSTRATED (B))) ((COYOTE (B)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (23, 38)
 \$(105 ((FRUSTRATED (B))) ((COYOTE (B)) (BEEP (A)) (CHASE (B) (A)))): (25, 38)
 \$(106 NIL ((BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28, 38)
 \$(107 NIL ((BEEP (A)) (COYOTE (B)) (CHASE (B) (A)))): (31, 38)
 \$(108 ((FRUSTRATED W)) ((SMART (A)) (COYOTE W))): (15, 39)
 \$(109 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y) (COYOTE (B)))): (19, 39)

\$(110 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE (B)))): (22, 39)
 \$(111 ((FRUSTRATED W)) ((RR (A)) (BEEP (A)) (COYOTE W))): (32, 39)
 \$(112 ((FRUSTRATED W)) ((BEEP (A)) (COYOTE W))): (38, 39)
 \$(113 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE (B)))): (38, 40)
 \$(114 NIL ((CATCH (B) (A)) (COYOTE Y))): (19, 42)
 \$(115 NIL ((CATCH (B) (A)))): (22, 42)
 \$(116 ((FRUSTRATED W)) ((COYOTE W) (CHASE W (A)))): (41, 42)
 \$(117 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3486) (COYOTE (B)) (COYOTE Y))): (19, 43)
 \$(118 ((FRUSTRATED (B))) ((RR (A)) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (20, 43)
 \$(119 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE (B)) (COYOTE Y))): (38, 43)
 \$(120 ((FRUSTRATED (B))) ((COYOTE (B)) (RR (A)))): (33, 44)
 \$(121 NIL ((CATCH (B) (A)) (COYOTE G3491) (BEEP (A)) (COYOTE Y))): (1, 45)
 \$(122 ((FRUSTRATED (B)))
 ((COYOTE G3495) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (23, 45)
 \$(123 NIL ((COYOTE Y) (BEEP (A)) (RR (A)) (CHASE (B) (A)))): (24, 45)
 \$(124 ((FRUSTRATED (B))) ((COYOTE Y) (BEEP (A)) (RR (A)))): (26, 45)
 \$(125 NIL
 ((COYOTE G3497) (RR (A)) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28, 45)
 \$(126 NIL ((COYOTE Y) (BEEP (A)) (RR (A)) (COYOTE (B)))): (29, 45)
 \$(127 ((FRUSTRATED (B)))
 ((COYOTE G3499) (RR (A)) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (43, 45)
 \$(128 ((FRUSTRATED (B)))
 ((SMART (A)) (COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (1, 46)
 \$(129 ((FRUSTRATED (B))) ((COYOTE Y) (COYOTE (B)) (CHASE (B) (A)) (RR (A)))): (33, 46)
 \$(130 ((FRUSTRATED (B)))
 ((SMART (A)) (COYOTE G3513) (CHASE (B) (A)) (COYOTE Y))): (1, 47)
 \$(131 ((FRUSTRATED (B))) ((COYOTE Y) (CHASE (B) (A)) (RR (A)))): (33, 47)
 \$(132 NIL ((SMART (A)) (COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (1, 48)
 \$(133 NIL ((COYOTE Y) (COYOTE (B)) (CHASE (B) (A)) (RR (A)))): (33, 48)
 \$(134 ((FRUSTRATED (B))) ((COYOTE G3547) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (23, 49)
 \$(135 ((FRUSTRATED (B))) ((COYOTE Y) (BEEP (A)) (CHASE (B) (A)))): (25, 49)
 \$(136 NIL ((COYOTE G3549) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28, 49)
 \$(137 ((FRUSTRATED (B))) ((COYOTE G3551) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (43, 49)
 \$(138 ((FRUSTRATED (B))) ((COYOTE Y) (COYOTE (B)) (CHASE (B) (A)))): (42, 50)
 \$(139 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3581) (COYOTE (B)) (COYOTE Y))): (1, 51)
 \$(140 ((FRUSTRATED (B))) ((COYOTE Y) (COYOTE (B)) (RR (A)))): (33, 51)
 \$(141 ((FRUSTRATED (B))) ((COYOTE (B)) (CHASE (B) U) (RR U))): (6, 52)
 \$(142 ((FRUSTRATED (B))) ((RR U) (CHASE (B) U))): (12, 53)
 \$(143 NIL ((COYOTE (B)) (RR U) (CHASE (B) U))): (13, 53)
 \$(144 NIL ((RR U) (CHASE (B) U))): (24, 53)
 \$(145 ((FRUSTRATED (B))) ((RR (A)))): (26, 53)
 \$(146 NIL ((RR (A)) (COYOTE (B)))): (29, 53)
 \$(147 ((FRUSTRATED (B))) ((BEEP (A)) (CHASE (B) (A)))): (25, 54)
 \$(148 NIL ((RR (A)) (CHASE (B) (A)))): (24, 58)
 \$(149 ((FRUSTRATED (B))) ((COYOTE (B)) (CHASE (B) (A)))): (42, 60)
 \$(150 ((CATCH (B) (A))) ((COYOTE Y))): (10, 62)
 \$(151 NIL ((SMART (A)) (COYOTE G3777) (CHASE (B) (A)) (COYOTE Y))): (19, 62)
 \$(152 NIL ((SMART (A)) (CHASE (B) (A)) (COYOTE Y))): (22, 62)
 \$(153 NIL ((COYOTE G3785) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (45, 62)
 \$(154 NIL ((COYOTE G3793) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (49, 62)
 \$(155 NIL ((RR (A)) (CHASE (B) (A)) (COYOTE Y))): (53, 62)

\$(156 NIL ((BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (54, 62)
 \$(157 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3801) (COYOTE Y))): (19, 63)
 \$(158 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE Y))): (22, 63)
 \$(159 ((FRUSTRATED (B))) ((COYOTE G3809) (RR (A)) (BEEP (A)) (COYOTE Y))): (45, 63)
 \$(160 ((FRUSTRATED (B))) ((COYOTE G3817) (BEEP (A)) (COYOTE Y))): (49, 63)
 \$(161 ((FRUSTRATED (B))) ((RR (A)) (COYOTE Y))): (53, 63)
 \$(162 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE Y))): (54, 63)
 \$(163 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324) (COYOTE Y) (COYOTE (B)))): (2, 64)
 \$(164 ((FRUSTRATED (B)))
 ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3, 64)
 \$(165 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324) (CHASE (B) (A)))): (7, 64)
 \$(166 NIL ((SMART (A)) (COYOTE G3324) (CHASE (B) (A)) (COYOTE Y))): (8, 64)
 \$(167 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324) (COYOTE Y))): (10, 64)
 \$(168 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14, 64)
 \$(169 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33, 64)
 \$(170 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y))): (42, 64)
 \$(171 ((FRUSTRATED (B))) ((BEEP (A)) (CHASE (B) (A)) (COYOTE G3852) (COYOTE Y))): (1, 65)
 \$(172 ((FRUSTRATED (B))) ((CHASE (B) (A)) (COYOTE Y))): (42, 66)
 \$(173 ((CATCH (B) (A))) NIL): (10, 67)
 \$(174 NIL ((SMART (A)) (CHASE (B) (A)))): (22, 67)
 \$(175 NIL ((BEEP (A)) (CHASE (B) (A)))): (54, 67)
 \$(176 NIL ((SMART (A)) (RR (A)))): (11, 68)
 \$(177 NIL ((SMART (A)) (COYOTE Y) (RR (A)))): (19, 68)
 \$(178 NIL ((BEEP (A)) (RR (A)))): (20, 68)
 \$(179 NIL ((COYOTE Y) (BEEP (A)) (RR (A)))): (45, 68)
 \$(180 NIL ((RR (A)))): (53, 68)
 \$(181 NIL ((SMART (A)) (COYOTE G3973) (CHASE (B) (A)) (COYOTE Y))): (1, 70)
 \$(182 ((FRUSTRATED (B))) ((SMART (A)))): (22, 73)
 \$(183 ((FRUSTRATED (B))) ((BEEP (A)))): (54, 73)
 \$(184 ((FRUSTRATED (B))) ((CHASE (B) (A)))): (42, 75)
 \$(185 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G4072) (COYOTE Y))): (1, 77)
 \$(186 NIL ((SMART (A)) (COYOTE Y) (COYOTE (B)))): (15, 79)
 \$(187 NIL ((SMART (A)) (COYOTE G4111) (COYOTE Y) (COYOTE (B)))): (19, 79)
 \$(188 NIL ((BEEP (A)) (COYOTE Y) (COYOTE (B)))): (38, 79)
 \$(189 NIL ((COYOTE G4119) (RR (A)) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (45, 79)
 \$(190 NIL ((COYOTE G4127) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (49, 79)
 \$(191 NIL ((RR (A)) (COYOTE Y) (COYOTE (B)))): (53, 79)
 \$(192 NIL ((COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (42, 80)
 \$(193 NIL ((SMART (A)) (COYOTE G3370) (COYOTE Y) (COYOTE (B)))): (2, 81)
 \$(194 NIL
 ((COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3, 81)
 \$(195 NIL ((SMART (A)) (COYOTE G3370) (CHASE (B) (A)) (COYOTE Y))): (7, 81)
 \$(196 NIL ((SMART (A)) (COYOTE G3370) (CHASE (B) (A)) (COYOTE (B)))): (7, 81)
 \$(197 NIL ((COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14, 81)
 \$(198 NIL ((COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33, 81)
 \$(199 NIL ((COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (42, 81)
 \$(200 NIL ((BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE G4228) (COYOTE Y))): (1, 82)
 \$(201 NIL ((SMART (A)) (COYOTE (B)))): (9, 83)
 \$(202 NIL ((BEEP (A)) (COYOTE (B)))): (38, 84)
 \$(203 NIL ((SMART (A)) (COYOTE G4272) (COYOTE (B)) (COYOTE Y))): (1, 85)
 \$(204 NIL ((COYOTE (B)) (CHASE (B) (A)))): (42, 87)

\$(205 ((FRUSTRATED W))
 ((BEEP (A)) (COYOTE Y) (COYOTE W) (RR (A)) (CHASE W (A)))): (5, 89)
 \$(206 NIL ((COYOTE W) (CATCH W (A)) (COYOTE Y) (RR (A)))): (6, 89)
 \$(207 ((FRUSTRATED W)) ((BEEP (A)) (COYOTE Y) (COYOTE W) (CHASE W (A)))): (16, 89)
 \$(208 NIL ((COYOTE W) (CATCH W (A)) (COYOTE Y))): (17, 89)
 \$(209 ((FRUSTRATED (B)))
 ((COYOTE (B)) (BEEP (A)) (COYOTE G4330) (CHASE (B) (A)) (COYOTE Y))): (23, 89)
 \$(210 NIL ((BEEP (A)) (COYOTE G4332) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28, 89)
 \$(211 ((FRUSTRATED W)) ((BEEP (A)) (COYOTE Y) (COYOTE W))): (39, 89)
 \$(212 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE G4352) (COYOTE (B)) (COYOTE Y))): (43, 89)
 \$(213 NIL ((COYOTE (B)) (BEEP (A)) (COYOTE G4368) (CHASE (B) (A)) (COYOTE Y))): (62, 89)
 \$(214 ((FRUSTRATED (B))) ((COYOTE (B)) (BEEP (A)) (COYOTE G4370) (COYOTE Y))): (63, 89)
 \$(215 NIL ((BEEP (A)) (COYOTE G4382) (COYOTE Y) (COYOTE (B)))): (79, 89)
 \$(216 ((FRUSTRATED W)) ((RR (A)) (COYOTE W))): (39, 91)
 \$(217 ((FRUSTRATED (B)))
 ((COYOTE (B)) (BEEP (A)) (CHASE (B) (A)) (COYOTE G4464) (COYOTE Y))): (1, 92)
 \$(218 NIL ((CATCH (B) (A)) (COYOTE G4517) (COYOTE Y))): (19, 93)
 \$(219 ((FRUSTRATED W)) ((COYOTE W) (RR (A)) (CHASE W (A)) (COYOTE Y))): (35, 93)
 \$(220 ((FRUSTRATED W)) ((COYOTE W) (CHASE W (A)) (COYOTE Y))): (41, 93)
 \$(221 ((FRUSTRATED (B)))
 ((COYOTE G4527) (COYOTE (B)) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (46, 93)
 \$(222 ((FRUSTRATED (B))) ((COYOTE G4529) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (47, 93)
 \$(223 NIL ((COYOTE G4531) (COYOTE (B)) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (48, 93)
 \$(224 ((FRUSTRATED (B)))
 ((COYOTE G4535) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (50, 93)
 \$(225 ((FRUSTRATED (B))) ((COYOTE G4537) (COYOTE (B)) (RR (A)) (COYOTE Y))): (51, 93)
 \$(226 ((FRUSTRATED (B)))
 ((COYOTE G3324) (CHASE (B) (A)) (COYOTE G4543) (COYOTE Y))): (64, 93)
 \$(227 ((FRUSTRATED (B))) ((CHASE (B) (A)) (COYOTE G4547) (COYOTE Y))): (66, 93)
 \$(228 NIL ((COYOTE G4549) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (70, 93)
 \$(229 ((FRUSTRATED (B))) ((COYOTE G4551) (RR (A)) (COYOTE Y))): (77, 93)
 \$(230 NIL ((COYOTE (B)) (CHASE (B) (A)) (COYOTE G4555) (COYOTE Y))): (80, 93)
 \$(231 NIL
 ((COYOTE G3370) (COYOTE (B)) (CHASE (B) (A)) (COYOTE G4557) (COYOTE Y))): (81, 93)
 \$(232 NIL ((COYOTE G4561) (RR (A)) (COYOTE (B)) (COYOTE Y))): (85, 93)
 \$(233 NIL ((CATCH (B) (A)) (COYOTE G4566) (COYOTE Y))): (1, 94)
 \$(234 ((FRUSTRATED (B))) ((COYOTE G4570) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (23, 94)
 \$(235 NIL ((COYOTE G4572) (RR (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28, 94)
 \$(236 ((FRUSTRATED (B))) ((COYOTE G4574) (RR (A)) (COYOTE (B)) (COYOTE Y))): (43, 94)
 \$(237 NIL ((COYOTE G4590) (RR (A)) (CHASE (B) (A)) (COYOTE Y))): (62, 94)
 \$(238 ((FRUSTRATED (B))) ((COYOTE G4592) (RR (A)) (COYOTE Y))): (63, 94)
 \$(239 NIL ((COYOTE Y) (RR (A)))): (68, 94)
 \$(240 NIL ((COYOTE G4604) (RR (A)) (COYOTE Y) (COYOTE (B)))): (79, 94)
 \$(241 ((FRUSTRATED W)) ((SMART (A)) (COYOTE Y) (COYOTE W))): (2, 99)
 \$(242 ((FRUSTRATED W)) ((COYOTE W) (CHASE W (A)) (COYOTE G4720) (COYOTE Y))): (93, 99)
 \$(243 ((FRUSTRATED W)) ((RR (A)) (COYOTE W) (COYOTE Y))): (93,100)
 \$(244 ((FRUSTRATED W)) ((COYOTE W))): (39,103)
 \$(245 ((FRUSTRATED (B))) ((COYOTE (B)))): (40,103)
 \$(246 ((FRUSTRATED (B))) ((COYOTE (B)) (COYOTE Y))): (43,103)
 \$(247 NIL ((COYOTE Y) (COYOTE (B)))): (79,103)
 \$(248 NIL ((COYOTE (B)))): (84,103)

\$(249 ((FRUSTRATED W)) ((COYOTE W) (COYOTE Y))): (93,108)
 \$(250 ((FRUSTRATED (B))) ((COYOTE G5182) (COYOTE (B)) (COYOTE Y))): (93,109)
 \$(251 ((FRUSTRATED (B))) ((COYOTE G5332) (CHASE (B) (A)) (COYOTE Y))): (23,114)
 \$(252 NIL ((COYOTE G5334) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (28,114)
 \$(253 ((FRUSTRATED (B))) ((COYOTE G5336) (COYOTE (B)) (COYOTE Y))): (43,114)
 \$(254 NIL ((COYOTE G5352) (CHASE (B) (A)) (COYOTE Y))): (62,114)
 \$(255 ((FRUSTRATED (B))) ((COYOTE G5354) (COYOTE Y))): (63,114)
 \$(256 NIL ((COYOTE Y) (CHASE (B) (A)))): (67,114)
 \$(257 ((FRUSTRATED (B))) ((COYOTE Y))): (73,114)
 \$(258 NIL ((COYOTE G5366) (COYOTE Y) (COYOTE (B)))): (79,114)
 \$(259 NIL ((CHASE (B) (A)))): (67,115)
 \$(260 ((FRUSTRATED (B))) NIL): (73,115)
 \$(261 ((FRUSTRATED (B)))
 ((COYOTE G3486) (COYOTE (B)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,117)
 \$(262 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3486) (COYOTE Y))): (7,117)
 \$(263 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3486) (COYOTE (B)))): (7,117)
 \$(264 NIL ((SMART (A)) (COYOTE G3486) (COYOTE (B)) (COYOTE Y))): (8,117)
 \$(265 ((FRUSTRATED (B))) ((COYOTE G3486) (COYOTE (B)) (COYOTE Y) (BEEP (A)))): (14,117)
 \$(266 ((FRUSTRATED (B))) ((COYOTE G3486) (COYOTE (B)) (COYOTE Y) (RR (A)))): (33,117)
 \$(267 ((FRUSTRATED (B))) ((COYOTE G3486) (COYOTE (B)) (COYOTE Y))): (42,117)
 \$(268 ((FRUSTRATED (B)))
 ((COYOTE G3486) (COYOTE (B)) (COYOTE G5535) (COYOTE Y))): (93,117)
 \$(269 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE (B)) (COYOTE G5549) (COYOTE Y))): (1,118)
 \$(270 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)) (RR (A)) (CHASE (B) (A)))): (5,121)
 \$(271 NIL ((CATCH (B) (A)) (COYOTE G3491) (COYOTE Y) (RR (A)))): (6,121)
 \$(272 NIL ((CATCH (B) (A)) (COYOTE G3491) (BEEP (A)))): (7,121)
 \$(273 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (RR (A)) (CHASE (B) (A)))): (12,121)
 \$(274 NIL
 ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)) (RR (A)) (CHASE (B) (A)))): (13,121)
 \$(275 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)) (CHASE (B) (A)))): (16,121)
 \$(276 NIL ((CATCH (B) (A)) (COYOTE G3491) (COYOTE Y))): (17,121)
 \$(277 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)) (RR (A)))): (18,121)
 \$(278 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE G5691) (CHASE (B) (A)) (COYOTE Y))): (23,121)
 \$(279 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (RR (A)) (CHASE (B) (A)))): (24,121)
 \$(280 ((FRUSTRATED (B))) ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (CHASE (B) (A)))): (25,121)
 \$(281 ((FRUSTRATED (B))) ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (RR (A)))): (26,121)
 \$(282 NIL
 ((COYOTE G3491) (BEEP (A)) (COYOTE G5693) (COYOTE (B)) (CHASE (B) (A))
 (COYOTE Y))): (28,121)
 \$(283 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (RR (A)) (COYOTE (B)))): (29,121)
 \$(284 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)) (CHASE (B) (A)))): (31,121)
 \$(285 ((FRUSTRATED (B))) ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (39,121)
 \$(286 ((FRUSTRATED (B)))
 ((COYOTE G3491) (BEEP (A)) (COYOTE G5695) (COYOTE (B)) (COYOTE Y))): (43,121)
 \$(287 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE G5711) (CHASE (B) (A)) (COYOTE Y))): (62,121)
 \$(288 ((FRUSTRATED (B))) ((COYOTE G3491) (BEEP (A)) (COYOTE G5713) (COYOTE Y))): (63,121)

\$(289 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (CHASE (B) (A)))): (67,121)
 \$(290 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (RR (A)))): (68,121)
 \$(291 ((FRUSTRATED (B))) ((COYOTE G3491) (BEEP (A)) (COYOTE Y))): (73,121)
 \$(292 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE G5725) (COYOTE Y) (COYOTE (B)))): (79,121)
 \$(293 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (84,121)
 \$(294 ((FRUSTRATED (B)))
 ((COYOTE G3495) (BEEP (A)) (CHASE (B) (A)) (COYOTE G5759) (COYOTE Y))): (1,122)
 \$(295 ((FRUSTRATED (B)))
 ((COYOTE G3495) (RR (A)) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,122)
 \$(296 ((FRUSTRATED (B))) ((COYOTE G3495) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,122)
 \$(297 ((FRUSTRATED (B))) ((COYOTE G3495) (RR (A)) (BEEP (A)) (CHASE (B) (A)))): (7,122)
 \$(298 NIL ((COYOTE G3495) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (8,122)
 \$(299 ((FRUSTRATED (B))) ((COYOTE G3495) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (9,122)
 \$(300 ((FRUSTRATED (B))) ((COYOTE G3495) (RR (A)) (BEEP (A)) (COYOTE Y))): (10,122)
 \$(301 NIL ((COYOTE G5833) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (1,123)
 \$(302 ((FRUSTRATED (B))) ((COYOTE G5909) (BEEP (A)) (COYOTE Y))): (1,124)
 \$(303 NIL
 ((COYOTE G3497) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE G5987)
 (COYOTE Y))): (1,125)
 \$(304 NIL ((COYOTE G3497) (RR (A)) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,125)
 \$(305 NIL ((COYOTE G3497) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,125)
 \$(306 NIL ((COYOTE G3497) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (7,125)
 \$(307 NIL ((COYOTE G3497) (RR (A)) (BEEP (A)) (CHASE (B) (A)) (COYOTE (B)))): (7,125)
 \$(308 NIL ((COYOTE G3497) (BEEP (A)) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (9,125)
 \$(309 NIL ((COYOTE G6067) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (1,126)
 \$(310 ((FRUSTRATED (B)))
 ((COYOTE G3499) (BEEP (A)) (COYOTE (B)) (COYOTE G6149) (COYOTE Y))): (1,127)
 \$(311 ((FRUSTRATED (B))) ((COYOTE G3499) (COYOTE (B)) (COYOTE Y) (RR (A)))): (6,127)
 \$(312 ((FRUSTRATED (B))) ((COYOTE G3499) (RR (A)) (BEEP (A)) (COYOTE Y))): (7,127)
 \$(313 ((FRUSTRATED (B))) ((COYOTE G3499) (RR (A)) (BEEP (A)) (COYOTE (B)))): (7,127)
 \$(314 NIL ((COYOTE G3499) (RR (A)) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (8,127)
 \$(315 ((FRUSTRATED (B))) ((COYOTE G3499) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (9,127)
 \$(316 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3501) (COYOTE Y) (COYOTE (B)))): (2,128)
 \$(317 ((FRUSTRATED (B)))
 ((COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,128)
 \$(318 ((FRUSTRATED (B)))
 ((SMART (A)) (COYOTE G3501) (CHASE (B) (A)) (COYOTE Y))): (7,128)
 \$(319 ((FRUSTRATED (B)))
 ((SMART (A)) (COYOTE G3501) (CHASE (B) (A)) (COYOTE (B)))): (7,128)
 \$(320 NIL ((SMART (A)) (COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (8,128)
 \$(321 ((FRUSTRATED (B)))
 ((COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14,128)
 \$(322 ((FRUSTRATED (B)))
 ((COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33,128)
 \$(323 ((FRUSTRATED (B)))
 ((COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (42,128)
 \$(324 ((FRUSTRATED (B)))
 ((COYOTE G3501) (COYOTE (B)) (CHASE (B) (A)) (COYOTE G6285) (COYOTE Y))): (93,128)
 \$(325 ((FRUSTRATED (B)))
 ((COYOTE G6319) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (1,129)
 \$(326 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3513) (COYOTE Y) (COYOTE (B)))): (2,130)

\$(327 ((FRUSTRATED (B)))
 ((COYOTE G3513) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,130)
 \$(328 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3513) (CHASE (B) (A)))): (7,130)
 \$(329 NIL ((SMART (A)) (COYOTE G3513) (CHASE (B) (A)) (COYOTE Y))): (8,130)
 \$(330 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3513) (COYOTE Y))): (10,130)
 \$(331 ((FRUSTRATED (B))) ((COYOTE G3513) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14,130)
 \$(332 ((FRUSTRATED (B))) ((COYOTE G3513) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33,130)
 \$(333 ((FRUSTRATED (B))) ((COYOTE G3513) (CHASE (B) (A)) (COYOTE Y))): (42,130)
 \$(334 ((FRUSTRATED (B)))
 ((COYOTE G3513) (CHASE (B) (A)) (COYOTE G6459) (COYOTE Y))): (93,130)
 \$(335 ((FRUSTRATED (B))) ((COYOTE G6497) (CHASE (B) (A)) (COYOTE Y))): (1,131)
 \$(336 NIL ((SMART (A)) (COYOTE G3527) (COYOTE Y) (COYOTE (B)))): (2,132)
 \$(337 NIL
 ((COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,132)
 \$(338 NIL ((SMART (A)) (COYOTE G3527) (CHASE (B) (A)) (COYOTE Y))): (7,132)
 \$(339 NIL ((SMART (A)) (COYOTE G3527) (CHASE (B) (A)) (COYOTE (B)))): (7,132)
 \$(340 NIL ((COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14,132)
 \$(341 NIL ((COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33,132)
 \$(342 NIL ((COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (42,132)
 \$(343 NIL
 ((COYOTE G3527) (COYOTE (B)) (CHASE (B) (A)) (COYOTE G6641) (COYOTE Y))): (93,132)
 \$(344 NIL ((COYOTE G6683) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (1,133)
 \$(345 ((FRUSTRATED (B))) ((COYOTE G3547) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,134)
 \$(346 ((FRUSTRATED (B))) ((COYOTE G3547) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,134)
 \$(347 ((FRUSTRATED (B))) ((COYOTE G3547) (BEEP (A)) (CHASE (B) (A)))): (7,134)
 \$(348 NIL ((COYOTE G3547) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (8,134)
 \$(349 ((FRUSTRATED (B))) ((COYOTE G3547) (BEEP (A)) (COYOTE Y))): (10,134)
 \$(350 ((FRUSTRATED (B))) ((COYOTE G3547) (CHASE (B) (A)) (COYOTE Y))): (17,134)
 \$(351 NIL ((COYOTE G3549) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,136)
 \$(352 NIL ((COYOTE G3549) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,136)
 \$(353 NIL ((COYOTE G3549) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (7,136)
 \$(354 NIL ((COYOTE G3549) (BEEP (A)) (CHASE (B) (A)) (COYOTE (B)))): (7,136)
 \$(355 NIL ((COYOTE G3549) (COYOTE (B)) (CHASE (B) (A)) (COYOTE Y))): (17,136)
 \$(356 ((FRUSTRATED (B))) ((COYOTE G3551) (COYOTE (B)) (COYOTE Y) (RR (A)))): (6,137)
 \$(357 ((FRUSTRATED (B))) ((COYOTE G3551) (BEEP (A)) (COYOTE Y))): (7,137)
 \$(358 ((FRUSTRATED (B))) ((COYOTE G3551) (BEEP (A)) (COYOTE (B)))): (7,137)
 \$(359 NIL ((COYOTE G3551) (BEEP (A)) (COYOTE (B)) (COYOTE Y))): (8,137)
 \$(360 ((FRUSTRATED (B))) ((COYOTE G3551) (COYOTE (B)) (COYOTE Y))): (17,137)
 \$(361 ((FRUSTRATED (B)))
 ((COYOTE G3581) (COYOTE (B)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,139)
 \$(362 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3581) (COYOTE Y))): (7,139)
 \$(363 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3581) (COYOTE (B)))): (7,139)
 \$(364 NIL ((SMART (A)) (COYOTE G3581) (COYOTE (B)) (COYOTE Y))): (8,139)
 \$(365 ((FRUSTRATED (B))) ((COYOTE G3581) (COYOTE (B)) (COYOTE Y) (BEEP (A)))): (14,139)
 \$(366 ((FRUSTRATED (B))) ((COYOTE G3581) (COYOTE (B)) (COYOTE Y) (RR (A)))): (33,139)
 \$(367 ((FRUSTRATED (B))) ((COYOTE G3581) (COYOTE (B)) (COYOTE Y))): (42,139)
 \$(368 ((FRUSTRATED (B)))
 ((COYOTE G3581) (COYOTE (B)) (COYOTE G7341) (COYOTE Y))): (93,139)
 \$(369 ((FRUSTRATED (B))) ((COYOTE G7397) (COYOTE (B)) (COYOTE Y))): (1,140)
 \$(370 NIL ((SMART (A)) (COYOTE G7770) (COYOTE Y))): (19,150)
 \$(371 NIL ((SMART (A)) (COYOTE Y))): (22,150)

\$(372 NIL ((COYOTE G7778) (RR (A)) (BEEP (A)) (COYOTE Y))): (45,150)
 \$(373 NIL ((COYOTE G7786) (BEEP (A)) (COYOTE Y))): (49,150)
 \$(374 NIL ((BEEP (A)) (COYOTE Y))): (54,150)
 \$(375 NIL ((COYOTE (B)) (BEEP (A)) (COYOTE G7816) (COYOTE Y))): (89,150)
 \$(376 NIL ((COYOTE G7822) (RR (A)) (COYOTE Y))): (94,150)
 \$(377 NIL ((COYOTE G7832) (COYOTE Y))): (114,150)
 \$(378 NIL ((COYOTE Y))): (115,150)
 \$(379 NIL ((COYOTE G3491) (BEEP (A)) (COYOTE G7840) (COYOTE Y))): (121,150)
 \$(380 NIL ((SMART (A)) (COYOTE G3777) (COYOTE Y) (COYOTE (B)))): (2,151)
 \$(381 NIL ((COYOTE G3777) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,151)
 \$(382 NIL ((SMART (A)) (COYOTE G3777) (CHASE (B) (A)))): (7,151)
 \$(383 NIL ((SMART (A)) (COYOTE G3777) (COYOTE Y))): (10,151)
 \$(384 NIL ((COYOTE G3777) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14,151)
 \$(385 NIL ((COYOTE G3777) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33,151)
 \$(386 NIL ((COYOTE G3777) (CHASE (B) (A)) (COYOTE Y))): (42,151)
 \$(387 NIL ((COYOTE G3777) (CHASE (B) (A)) (COYOTE G7931) (COYOTE Y))): (93,151)
 \$(388 NIL ((CHASE (B) (A)) (COYOTE G8045) (COYOTE Y))): (93,152)
 \$(389 NIL ((COYOTE G3785) (BEEP (A)) (CHASE (B) (A)) (COYOTE G8109) (COYOTE Y))): (1,153)
 \$(390 NIL ((COYOTE G3785) (RR (A)) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,153)
 \$(391 NIL ((COYOTE G3785) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,153)
 \$(392 NIL ((COYOTE G3785) (RR (A)) (BEEP (A)) (CHASE (B) (A)))): (7,153)
 \$(393 NIL ((COYOTE G3785) (BEEP (A)) (CHASE (B) (A)) (COYOTE Y))): (9,153)
 \$(394 NIL ((COYOTE G3785) (RR (A)) (BEEP (A)) (COYOTE Y))): (10,153)
 \$(395 NIL ((COYOTE G3793) (BEEP (A)) (COYOTE Y) (COYOTE (B)))): (2,154)
 \$(396 NIL ((COYOTE G3793) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (6,154)
 \$(397 NIL ((COYOTE G3793) (BEEP (A)) (CHASE (B) (A)))): (7,154)
 \$(398 NIL ((COYOTE G3793) (BEEP (A)) (COYOTE Y))): (10,154)
 \$(399 NIL ((COYOTE G3793) (CHASE (B) (A)) (COYOTE Y))): (17,154)
 \$(400 NIL ((CHASE (B) (A)) (COYOTE G8347) (COYOTE Y))): (1,155)
 \$(401 ((FRUSTRATED (B))) ((COYOTE G3801) (COYOTE Y) (RR (A)) (BEEP (A)))): (3,157)
 \$(402 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3801))): (7,157)
 \$(403 NIL ((SMART (A)) (COYOTE G3801) (COYOTE Y))): (8,157)
 \$(404 ((FRUSTRATED (B))) ((COYOTE G3801) (COYOTE Y) (BEEP (A)))): (14,157)
 \$(405 ((FRUSTRATED (B))) ((COYOTE G3801) (COYOTE Y) (RR (A)))): (33,157)
 \$(406 ((FRUSTRATED (B))) ((COYOTE G3801) (COYOTE Y))): (42,157)
 \$(407 ((FRUSTRATED (B))) ((COYOTE G3801) (COYOTE G8645) (COYOTE Y))): (93,157)
 \$(408 ((FRUSTRATED (B))) ((COYOTE G8771) (COYOTE Y))): (93,158)
 \$(409 ((FRUSTRATED (B))) ((COYOTE G3809) (BEEP (A)) (COYOTE G8847) (COYOTE Y))): (1,159)
 \$(410 ((FRUSTRATED (B))) ((COYOTE G3809) (COYOTE Y) (RR (A)))): (6,159)
 \$(411 ((FRUSTRATED (B))) ((COYOTE G3809) (RR (A)) (BEEP (A)))): (7,159)
 \$(412 NIL ((COYOTE G3809) (RR (A)) (BEEP (A)) (COYOTE Y))): (8,159)
 \$(413 ((FRUSTRATED (B))) ((COYOTE G3809) (BEEP (A)) (COYOTE Y))): (9,159)
 \$(414 ((FRUSTRATED (B))) ((COYOTE G3817) (COYOTE Y) (RR (A)))): (6,160)
 \$(415 ((FRUSTRATED (B))) ((COYOTE G3817) (BEEP (A)))): (7,160)
 \$(416 NIL ((COYOTE G3817) (BEEP (A)) (COYOTE Y))): (8,160)
 \$(417 ((FRUSTRATED (B))) ((COYOTE G3817) (COYOTE Y))): (17,160)
 \$(418 ((FRUSTRATED (B))) ((COYOTE G9109) (COYOTE Y))): (1,161)
 \$(419 ((FRUSTRATED (B)))
 ((COYOTE G3324) (COYOTE Y) (COYOTE (B)) (RR (A)) (BEEP (A)))): (3,163)
 \$(420 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324) (COYOTE (B)))): (7,163)
 \$(421 NIL ((SMART (A)) (COYOTE G3324) (COYOTE Y) (COYOTE (B)))): (8,163)

\$(422 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (COYOTE (B)) (BEEP (A)))): (14,163)
 \$(423 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (COYOTE (B)) (RR (A)))): (33,163)
 \$(424 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (COYOTE (B)))): (42,163)
 \$(425 ((FRUSTRATED (B)))
 ((COYOTE G3324) (COYOTE G9433) (COYOTE (B)) (COYOTE Y))): (93,163)
 \$(426 ((FRUSTRATED (B)))
 ((COYOTE G3324) (CHASE (B) (A)) (COYOTE G9519) (BEEP (A)) (COYOTE Y))): (1,164)
 \$(427 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (RR (A)) (BEEP (A)))): (7,164)
 \$(428 NIL ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (RR (A)) (BEEP (A)))): (8,164)
 \$(429 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (RR (A)) (BEEP (A)))): (10,164)
 \$(430 NIL ((SMART (A)) (COYOTE G3324) (CHASE (B) (A)))): (8,165)
 \$(431 ((FRUSTRATED (B))) ((SMART (A)) (COYOTE G3324))): (10,165)
 \$(432 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (BEEP (A)))): (14,165)
 \$(433 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)) (RR (A)))): (33,165)
 \$(434 ((FRUSTRATED (B))) ((COYOTE G3324) (CHASE (B) (A)))): (42,165)
 \$(435 NIL ((SMART (A)) (COYOTE G3324) (COYOTE Y))): (10,166)
 \$(436 NIL ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (BEEP (A)))): (14,166)
 \$(437 NIL ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y) (RR (A)))): (33,166)
 \$(438 NIL ((COYOTE G3324) (CHASE (B) (A)) (COYOTE Y))): (42,166)
 \$(439 NIL ((COYOTE G3324) (CHASE (B) (A)) (COYOTE G9723) (COYOTE Y))): (93,166)
 \$(440 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (BEEP (A)))): (14,167)
 \$(441 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y) (RR (A)))): (33,167)
 \$(442 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE Y))): (42,167)
 \$(443 ((FRUSTRATED (B))) ((COYOTE G3324) (COYOTE G9873) (COYOTE Y))): (93,167)
 \$(444 ((FRUSTRATED (B)))
 ((COYOTE G3324) (CHASE (B) (A)) (COYOTE G10131) (COYOTE Y))): (1,169)
 \$(445 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE G3852) (COYOTE Y) (COYOTE (B)))): (2,171)
 \$(446 ((FRUSTRATED (B))) ((CHASE (B) (A)) (COYOTE G3852) (COYOTE Y) (RR (A)))): (6,171)
 \$(447 ((FRUSTRATED (B))) ((BEEP (A)) (CHASE (B) (A)) (COYOTE G3852))): (7,171)
 \$(448 NIL ((BEEP (A)) (CHASE (B) (A)) (COYOTE G3852) (COYOTE Y))): (8,171)
 \$(449 ((FRUSTRATED (B))) ((BEEP (A)) (COYOTE G3852) (COYOTE Y))): (10,171)
 \$(450 ((FRUSTRATED (B))) ((CHASE (B) (A)) (COYOTE G3852) (COYOTE Y))): (17,171)
 \$(451 NIL ((SMART (A)))): (22,173)
 \$(452 NIL ((BEEP (A)))): (54,173)
 \$(453 NIL NIL): (115,173)

4.Harmonia

*****PROOF *****

```
(1 ((GRANDPARENT X Y)) ((PARENT X Z) (PARENT Z Y)))
(2 ((PARENT X Y)) ((MOTHER X Y)))
(3 ((PARENT X Y)) ((FATHER X Y)))
(4 ((FATHER (ZEUS) (ARES))) NIL)
(5 ((MOTHER (HERA) (ARES))) NIL)
(6 ((FATHER (ARES) (HARMONIA))) NIL)
(7 NIL ((GRANDPARENT X (HARMONIA))))
$(8 NIL ((PARENT G3253 Z) (PARENT Z (HARMONIA)))): ( 1, 7)
$(9 NIL ((PARENT Z (HARMONIA)) (MOTHER G3253 Z))): ( 2, 8)
$(10 NIL ((PARENT G3253 Z) (MOTHER Z (HARMONIA)))): ( 2, 8)
$(11 NIL ((PARENT Z (HARMONIA)) (FATHER G3253 Z))): ( 3, 8)
$(12 NIL ((PARENT G3253 Z) (FATHER Z (HARMONIA)))): ( 3, 8)
$(13 NIL ((MOTHER G3253 Z) (MOTHER Z (HARMONIA)))): ( 2, 9)
$(14 NIL ((MOTHER G3253 Z) (FATHER Z (HARMONIA)))): ( 3, 9)
$(15 NIL ((PARENT (ARES) (HARMONIA)))): ( 5, 9)
$(16 NIL ((MOTHER Z (HARMONIA)) (FATHER G3253 Z))): ( 3, 10)
$(17 NIL ((FATHER G3253 Z) (FATHER Z (HARMONIA)))): ( 3, 11)
$(18 NIL ((PARENT (HARMONIA) (HARMONIA)))): ( 6, 11)
$(19 NIL ((PARENT G3253 (ARES)))): ( 6, 12)
$(20 NIL ((MOTHER (ARES) (HARMONIA)))): ( 5, 13)
$(21 NIL ((FATHER (ARES) (HARMONIA)))): ( 5, 14)
$(22 NIL ((MOTHER G3253 (ARES)))): ( 6, 14)
$(23 NIL ((MOTHER (HARMONIA) (HARMONIA)))): ( 6, 16)
$(24 NIL ((FATHER (HARMONIA) (HARMONIA)))): ( 6, 17)
$(25 NIL ((FATHER G3253 (ARES)))): ( 6, 17)
$(26 NIL NIL): ( 6, 21)
```

5.Test

*****PROOF *****

```
(1 NIL ((LATE X) (ENROLL X Y)))
(2 ((ENROLL X (A))) ((HAPPY X)))
(3 ((HUNGRY X) (HAPPY X)) NIL)
(4 ((LATE (B))) NIL)
(5 NIL ((HUNGRY (B))))
$(6 ((HAPPY (B))) NIL): ( 3, 5)
$(7 ((ENROLL (B) (A))) NIL): ( 2, 6)
$(8 NIL ((LATE (B)))): ( 1, 7)
$(9 NIL NIL): ( 4, 8)
```